

CLAIMS

1. A pump comprising:

a cavity (2) formed in an insulating substrate (1), the upper portion of the substrate located in the vicinity of the cavity forming a border,

5 a conductive layer (3) covering the inside of the cavity all the way to the border and possibly covering the border,

a flexible membrane (6), formed of a conductive material, placed above the cavity and bearing against the border,

10 a dielectric layer (7) covering the conductive layer or the membrane to insulate the portions of the conductive layer and of the membrane which are close to each other,

at least one ventilating duct (4; 10) formed in the insulating substrate which emerges into the cavity through an opening (O1; O2) of the conductive layer, and

15 terminals of application of a voltage (V) between the conductive layer and the membrane.

2. The pump of claim 1, wherein said cavity (2) has substantially the shape of a cup so that the interval between the conductive layer (3) and the membrane (6) progressively increases from the border to the bottom of the
20 cavity.

3. The pump of claim 1, wherein the membrane (6) is in an idle state when no voltage (V) is applied between said terminals, the application of a voltage deforming the membrane by drawing it closer to the conductive layer (3),
25 the suppression of the voltage bringing the membrane back to its idle state.

4. The pump of claim 1, comprising a single duct (4) emerging substantially at the bottom of the cavity.

5. The pump of claim 1, comprising two ducts (4, 10), one cup emerging substantially at the bottom of the cavity, the other one emerging close to the border.

5 6. An integrated circuit comprising the pump of claim 1, the pump being connected to an assembly of ventilating ducts formed in the semiconductor substrate of the integrated circuit.

7. A method for forming a pump in an integrated circuit, which
10 comprises the steps of:

- forming a cavity (20) in an insulating substrate (21), the upper portion of the substrate located in the vicinity of the cavity forming a border;

- covering the inside of the cavity all the way to the border and possibly the border with a first conductive layer (30);

15 - forming an opening (O3) of the conductive layer emerging into a ventilating duct (31) previously formed in the insulating substrate;

- filling the cavity with a sacrificial portion (32);

20 - covering the sacrificial portion and the portion of the first conductive layer placed above the border with a first insulating layer (33) and with a second insulating layer (34);

- forming a small opening (O4) in the second conductive layer and in the first insulating layer;

- removing the sacrificial portion; and

25 - covering the second conductive layer with a second insulating layer (35) to close back the opening.

8. The method of claim 7, wherein the step of forming a cavity (20) in an insulating substrate (21) comprises the steps of:

- forming insulating pads (23, 24) on a first insulating layer (22);

30 - covering the first insulating layer and the insulating pads with a second insulating layer (25); and

- performing a chem.-mech. polishing of the second insulating layer to expose the insulating pads, the etch method of the polishing being such that it etches the second insulating layer more than the insulating pads, the insulating pads forming said border.

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9. A method for actuating the pump of claim 3, wherein a voltage is applied at regular or irregular intervals between said terminals.